National Smallpox Vaccination Program Update

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Objectives of Presentation

- Describe
  - Smallpox
    Clinical presentation, diagnosis, and outcomes
  - Smallpox vaccine
    Adverse Events
  - Strategies for control of smallpox
  - CDC smallpox response planning
  - Program Update
  - Partnership in emergency response

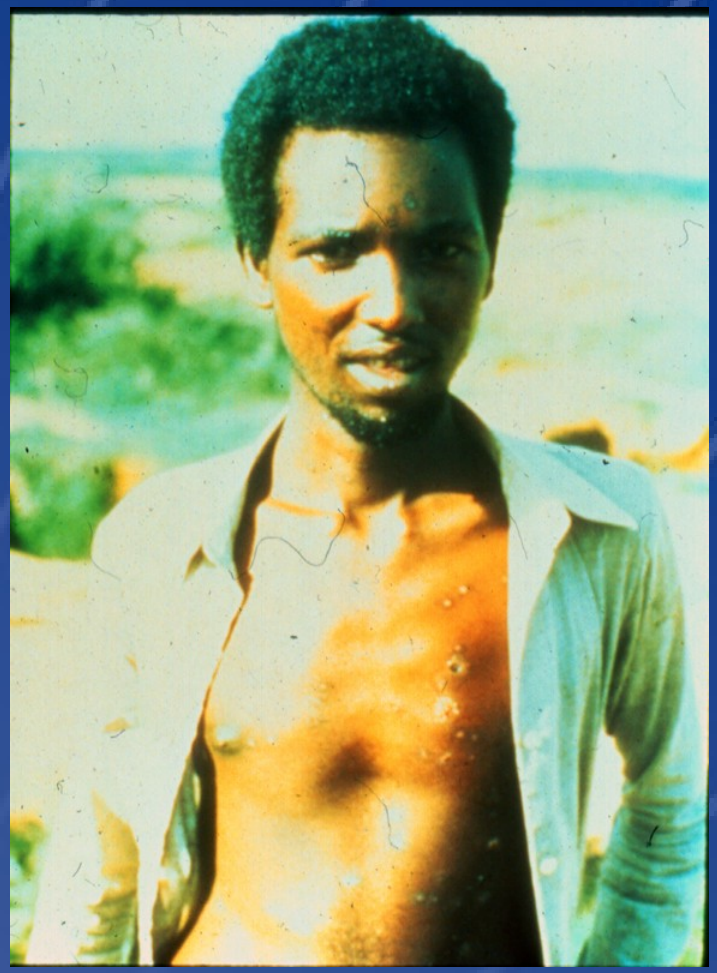
The Burden of Smallpox

- First described in Chinese text in 4th century AD
- More deaths from smallpox than from plague and all wars together
- Last case in U.S. in 1949
- 1960s: 15 million smallpox cases and 2 million smallpox deaths per year

THE DISEASE IS GONE!
LAST CASES OF SMALLPOX**

Rahima Banu – 16 October 1975

Variola Major-Bangladesh



Ali Maow Maalin – 26 October 1977

Variola Minor-Somalia

** **Two laboratory acquired cases occurred in UK in 1976**

Variola Virus

- Orthopoxvirus
- Infects only humans in nature
- May remain viable in crusts for years at room temperature
- Rapidly inactivated by UV light, chemical disinfectants

Smallpox Rash

- Vesicles often have a central depression (“umbilication”)
- Pustules raised, round, and firm to the touch - like a small bead in the skin
- Lesions on palms and soles (≥50% of cases)

Smallpox Transmission

- **Common:** Person – to –person by airborne droplets
  - Face-to-face contact (6-7 feet)
  - Should be able to interrupt by droplet mask protection (N-95)
- **Rare:** airborne over long distance
- No carrier state
- **Rare:** as fomites
  - Bedclothes, linens, blankets
- **Not transmitted by:** food, water

Factors Influencing Smallpox Spread

- **Temperature –** Lower temperature, higher viability with aerosols
- **Humidity –** Lower humidity, higher viability with aerosols
- **Intensity and duration of contact**
- **Contagious period when exposed**
- **Population density**
- **Coughing/sneezing**

Smallpox Vaccine

Smallpox Vaccine

- 1796: Edward Jenner develops vaccine
- Live vaccinia virus in calf lymph
- 1940s: Freeze dried vaccine obviated need for cold chain
- 1971: Routine vaccination stopped in U.S.
- New vaccine produced using cell culture technology

Smallpox Vaccine

- Schedule
  - 1 successful dose ≥18 years of age
- Revaccination
  - 10 years (risk of contact with nonhighly attenuated vaccinia and recombinants)
  - 3 years (high risk of contact with more virulent Orthopoxviruses)

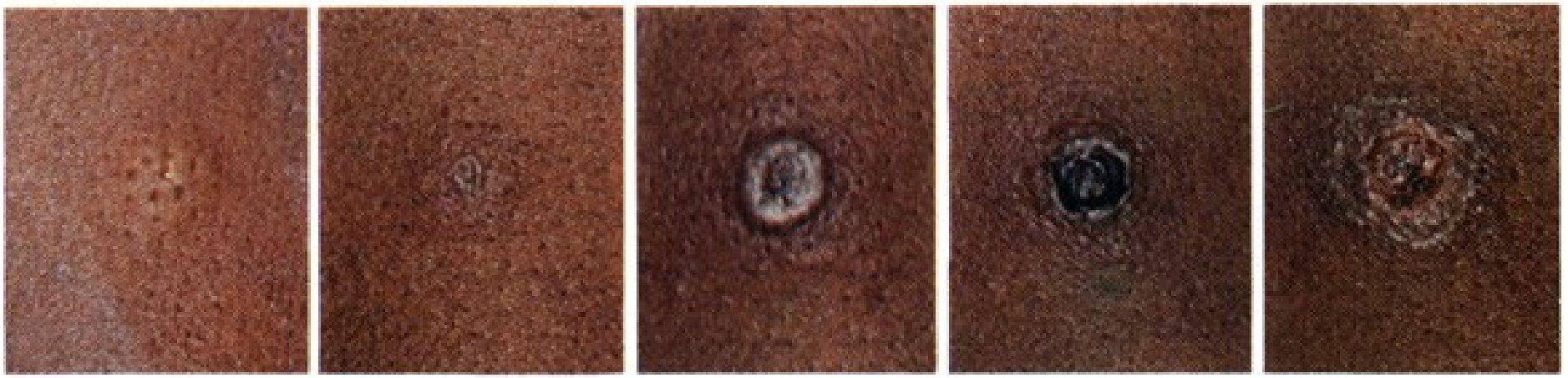
Current vaccination tool

Bifurcated needle

(Needle-shielding, safety bifurcated needles are in development by Becton-Dickinson, Univec, and perhaps others)

DAY 0 DAY 3 DAY 7 DAY 10 DAY 14

Primary vaccination: multiple pressure method



Late revaccination: multiple pressure method

Smallpox Vaccine Adverse Reactions

- Inadvertent autoinoculation
- Eczema vaccinatum
- Generalized vaccinia
- Progressive vaccinia (vaccinia necrosum)
- Postvaccinial encephalitis
- Other dermatologic conditions

Facial autoinoculation

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Generalized Vaccinia

Eczema Vaccinatum

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Eczema Vaccinatum (contact)

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Eczema Vaccinatum (contact) Residual Scar after recovery

12-D-27

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Progressive Vaccinia

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Progressive Vaccinia

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Smallpox Vaccine Contraindications and Precautions Nonemergency Situations

- Severe allergic reaction to prior dose or vaccine component
- Immunosuppression or immuno-suppressed household contact
- Pregnancy
- Eczema, history of eczema, or household contact with eczema or history of eczema
- Other skin conditions
- Age <18 years

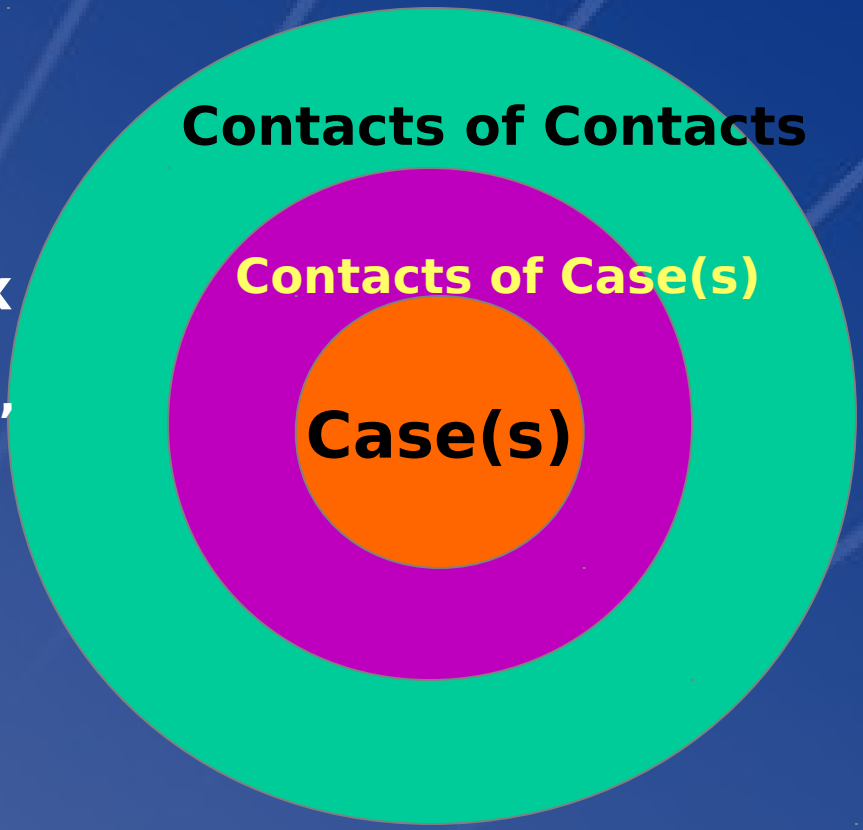
CDC Smallpox Response Plan

Smallpox Response Plan and Guidelines Overview

- **Working document to be updated periodically**
- **Identifies federal, state and local public health activities necessary to respond effectively to a *confirmed case of smallpox***
- **CDC Director, in consultation with DHHS, may implement all or portions of the plan**

Ring Vaccination: Search and Containment

- Search for cases
- Provide a ring of immunity around each case
- Used to eradicate smallpox
  - required to control disease in face of ‘routine immunization’
  - minimizes adverse events
  - most efficient use of vaccine supplies
  - Workable for multiple cases / locations



December, 13 2002
Announcement of U.S. Smallpox Plan

The Federal Plan

(announced 12/13/02)

- **Vaccinate civilian smallpox response teams**
- **Vaccinate Department of Defense personnel**
- **Vaccinate selected staff in overseas assignments (Department of State)**
- **Vaccination not recommended for the general public at present – However, accommodate those who insist..**

National Smallpox Vaccination Program, Stage I Implementation Plan

Goal of the Plan

Increase the nation's bioterrorism preparedness by safely and expeditiously immunizing members of smallpox public health and health care response teams.

Smallpox Public Health Response Teams

- Public health and medical personnel needed to investigate initial suspected cases and initiate control measures
- Includes medical, public health, epidemiologic, laboratory, nursing, other skills
- Each state should have at least one team

Smallpox Healthcare Response Teams

- Healthcare personnel from participating hospitals who will be asked to evaluate, manage, and treat the initial suspected cases
- Hospitals with appropriate facilities that choose to participate -- identified by state (and local) public health officials.
- Hospitals with assistance from state (and local) public health officials will identify participating healthcare personnel.

CDC Responsibilities

- Support state activities
  - Provide clinical care guidelines – ACIP/HICPAC
  - Training/education materials for all aspects of the program
  - Ensure integrated information management systems
  - Provide vaccine (and VIG and Cidofovir if needed)
  - Ready access - consultation on adverse events
  - Communication with public, government, healthcare community, etc. at national level
- Monitor program
  - Process (IOM, DSMB)
  - Safety and efficacy of vaccine (ACIP)

State Responsibilities (with Hospitals)

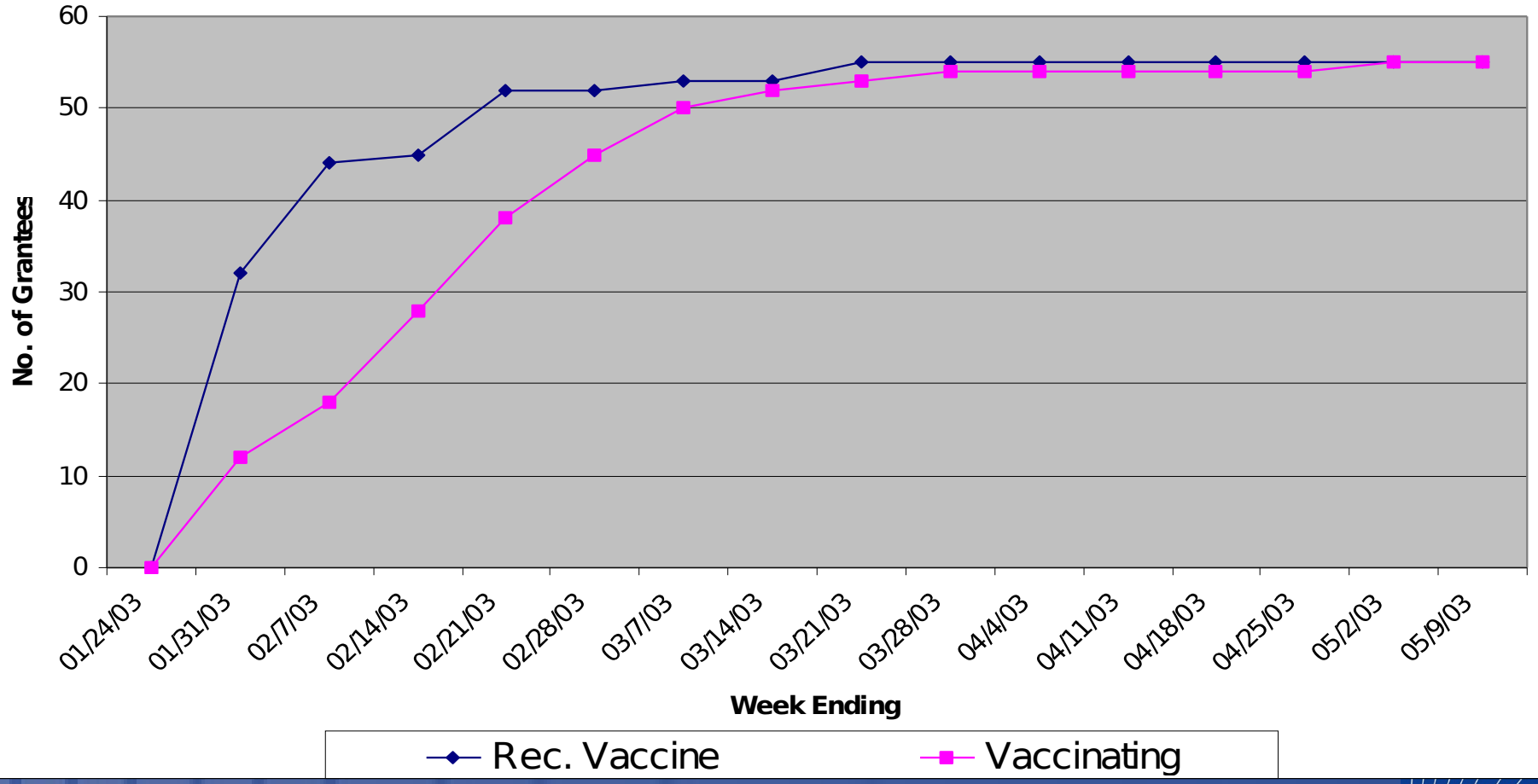
- Identify public health and healthcare response team members
- Schedule vaccinations
- Set up vaccination clinics
- Document/track vaccine take in team members
- Adverse event evaluation, treatment, and monitoring procedures
- Communication with public, government, healthcare community, etc. in state

Program Update

PROGRAM SUMMARY as of COB Friday, May 9, 2003	
55	Grantees Vaccinating as of 5/9/03
7	Grantees with NO DATA
62	TOTAL GRANTEES

Number of Grantees Participating

by Program Component



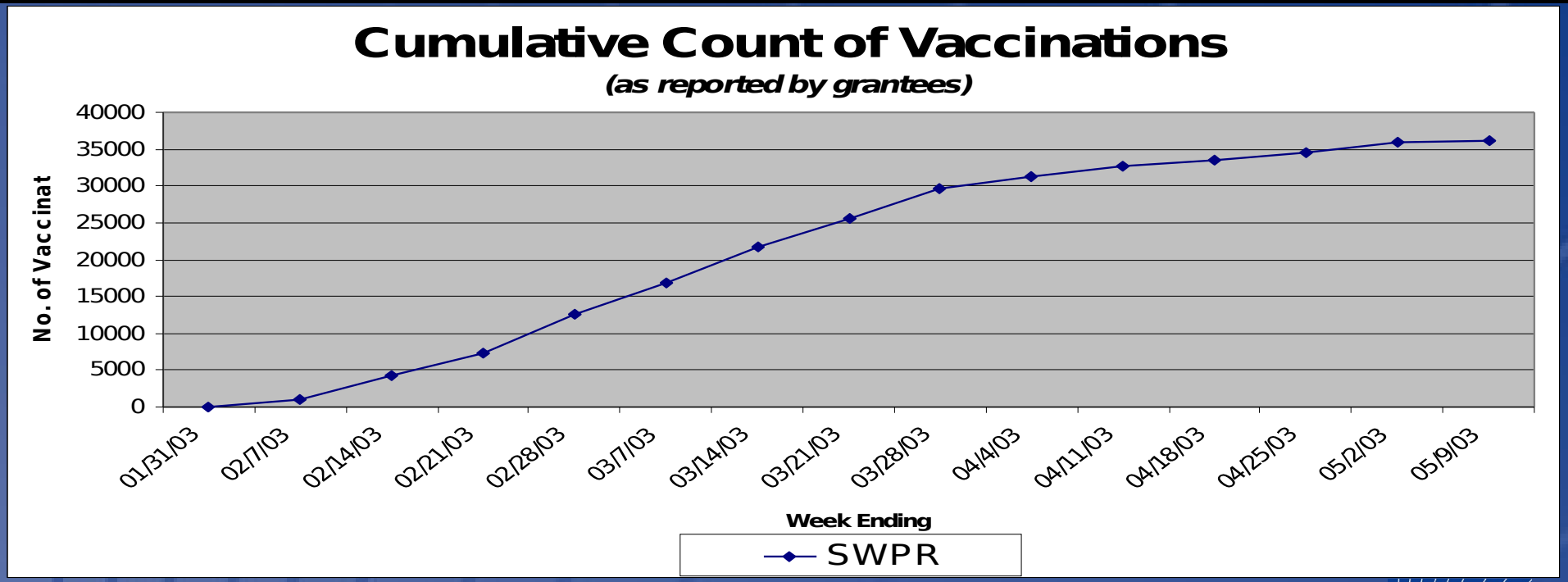
DATA SUMMARY

as of COB Friday, May 9, 2003

SNS	SMALLPOX WEEKLY PROGRESS REPORT (SWPR)				
#of Vaccine Doses Released, 5/9/03	#of Individuals Vaccinated, COB 5/9/03 TOTAL	#of Individuals Vaccinated PH Team	#of Individuals Vaccinated Healthcare Team	#of Individuals Vaccinated Other	#of Hospitals with Vaccination Started
289,700	36,217	11,379	23,213	1,625	2,018

SWPR HISTORICAL TOTALS

#of Individuals Vaccinated, COB 2/7/03	#of Individuals Vaccinated, COB 2/14/03	#of Individuals Vaccinated, COB 2/21/03	#of Individuals Vaccinated, COB 2/28/03	#of Individuals Vaccinated, COB 3/7/03	#of Individuals Vaccinated, COB 3/14/03	#of Individuals Vaccinated, COB 3/21/03	#of Individuals Vaccinated, COB 3/28/03	#of Individuals Vaccinated, COB 4/4/03	#of Individuals Vaccinated, COB 4/11/03	#of Individuals Vaccinated, COB 4/18/03	#of Individuals Vaccinated, COB 4/25/03	#of Individuals Vaccinated, COB 5/2/03
1,023	4,213	7,354	12,690	16,919	21,587	25,645	29,584	31,297	32,644	33,444	34,541	35,903



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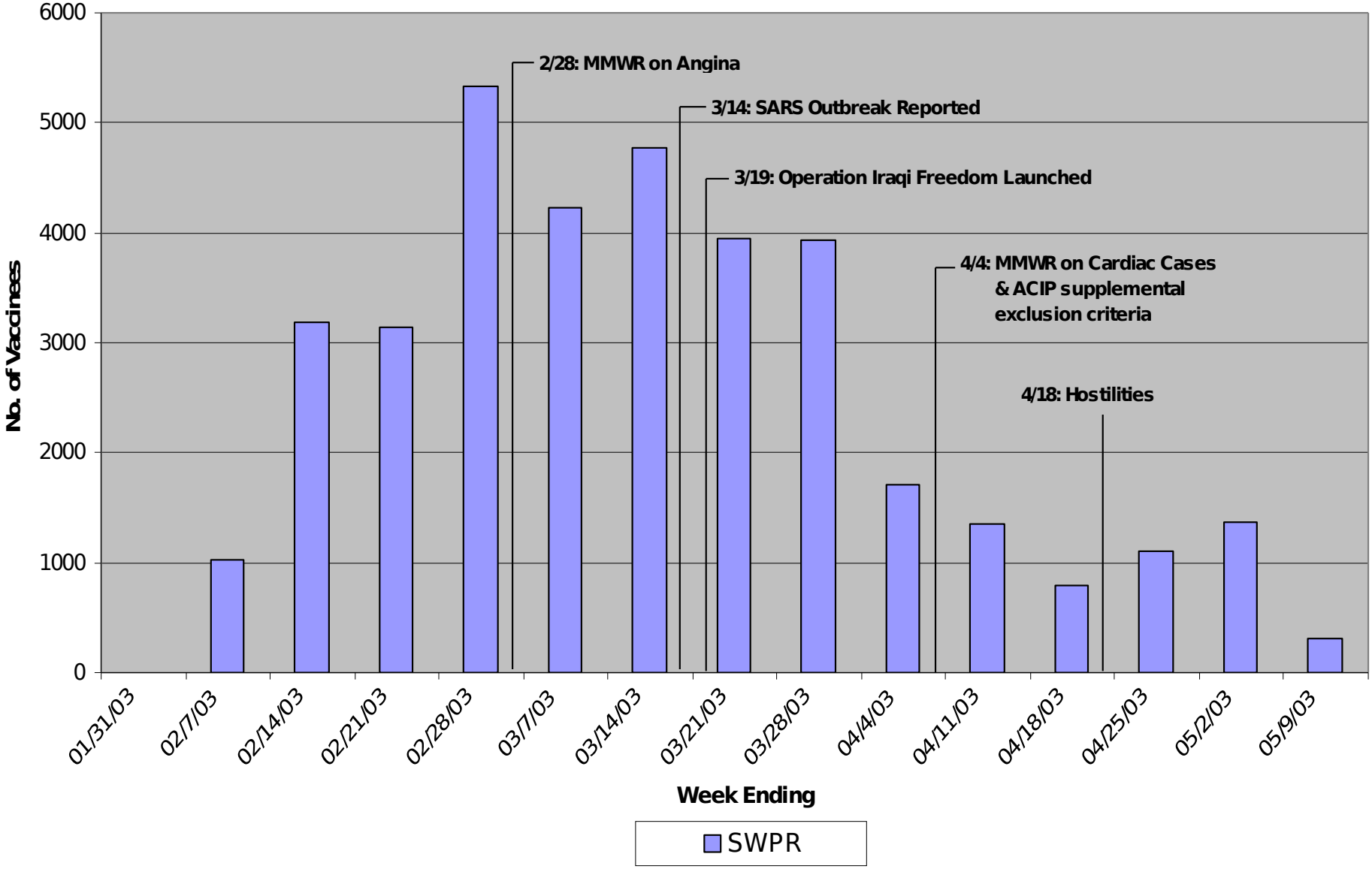
Smallpox Weekly Progress Report (SWPR)
Weekly Count of Vaccinations



Partnership in Emergency Response

Preparedness and Response to Disasters and Public Health Emergencies

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Background

- All disasters begin locally…
- “Disasters are emergencies of a severity and magnitude resulting in death, injuries, illness and/or property damage that cannot be effectively managed by the application of routine procedures or resources” (FEMA)
- Public Health issues exist in almost all disasters

Local Preparedness Is Essential

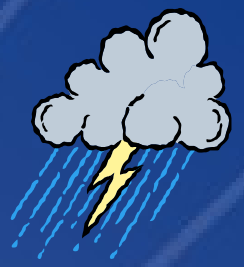
- Initial Detection
- Initial Response

Public Health Role in Emergencies

- Health and medical evaluation and recommendations
- Worker health and safety
- Risk assessment and communication
- Population monitoring and follow up
- Exposure assessment

CDC Emergency Response Plan Addresses Public Health Assistance for:

- **Natural Problems**
  - **Hurricanes**
  - **Severe Weather**
  - **Earthquakes**
  - **Volcanic Eruptions**
  - **Floods**
  - **Severe Heat/Cold**
  - **Disease Outbreak**



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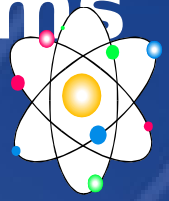
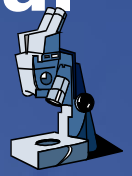
Public Health Assistance For:

- Technological Problems
  - Radiation
  - Hazardous Chemica
  - Oil
  - Biological





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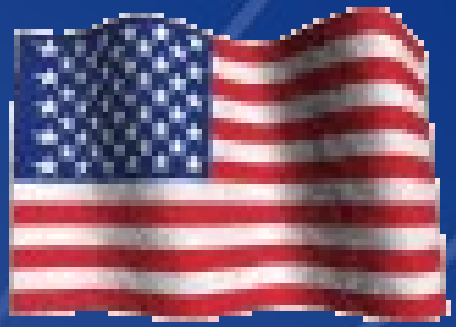
Public Health Assistance For:

- Terrorism
  - Chemical
  - Biological
  - Radiological
  - Nuclear
  - Explosion



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Disasters, terrorism and other public health emergencies all require rapid mobilization of resources and experts across agencies and across jurisdictional lines

Emergency Public Health

- **NOT a new public health activity**
- **IS a new public health priority**
  - **Different culture**
  - **Different way of doing business**
  - **National security and law enforcement involvement**
- **Partnership with Emergency Management**

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How Does CDC Get Involved?

- State/Local Request
- Federal Activation/ Deployment
  - Federal Response Plan (FRP)
  - National Oil and Hazardous Substances Pollution Contingency Plan (NCP)
  - Federal Radiological Emergency Response Plan (FRERP)

Federal Response Plan

“The Federal Response Plan (FRP) establishes a process and structure for the systematic, coordinated, and effective delivery of Federal assistance to address the consequences of any major disaster or emergency declared under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.”

Federal Response Plan

- Signed by 27 Federal Agencies and American Red Cross;
- All hazards approach adopted in April, 1992 and revised in 1999;
- Response organized under the Incident Command System structure;
- Cross-walk with State Emergency Response Plans- Local Plans;
- Brings resources including people, supplies, equipment, and funding

FRP Signatory Agencies

Department of Agriculture
Department of Commerce
Department of Defense
Department of Education
Department of Energy
Department of Health and Human Services
Department of Housing/Urban Development
Department of Interior
Department of Justice
Department of Labor
Department of State
Department of Transportation
Department of Treasury
Department of Veterans Affairs

Agency for International Developm
American National Red Cros
Environmental Protection Agen
Federal Communications Commiss
Federal Emergency Management Age
General Services Administration
Interstate Commerce Commiss
Nat'l Aeronautics & Space Adm
National Communications Syst
Nuclear Regulatory Commissi
Office of Personnel Manageme
Tennessee Valley Authority
US Postal Service
Small Business Administration

ESF #8 - Health & Medical Services

- **Lead Federal Agency: Department of Health and Human Services**

- **Supporting Departments and Agencies**
  - **Department of Homeland Security**
  - **Department of Defense**
  - **Department of Veterans Affairs**
  - **Department of Transportation**
  - **Department of Energy**
  - **Department of Agriculture**
  - **Department of Justice**
  - **Federal Emergency Management Agency**
  - **Environmental Protection Agency**
  - **General Services Administration**
  - **American Red Cross**
  - **National Communications System**
  - **Office of U.S. Foreign Disaster Assistance**
  - **U.S. Postal Service**

Roles of Emergency Support Function #8

1. Assessment of Health and Medical Needs (OER)
2. Health Surveillance (CDC)
3. Medical Care Personnel (OER)
4. Health/Medical Equipment and Supplies (OER/CDC)
5. Patient Evacuation (OER)
6. In-Hospital Care (OER)
7. Food/Drug/Medical Device Safety (FDA)
8. Worker Health/Safety (CDC)
9. Radiological, Chemical, and Biological Hazards (CDC)
10. Mental Health (SAMHSA)
11. Public Health Information (CDC)
12. Vector Control (CDC)
13. Potable Water/Wastewater & Solid Waste Disposal (IHS)
14. Victim Identification/Mortuary Services (OER)
15. Veterinary Services (OER)

What Does CDC do in a Public Health Emergency/ Disaster?

Coordinate National Public Health Response Efforts

Assist local and state public health and medical officials:

1) Laboratory
   - Specimen collection/shipping protocols
   - Agent identification
   - Agent characterization

What Does CDC do in a Public Health Emergency/ Disaster?

2) Epidemic Characterization and Investigation
   - Epidemiological investigation
     - Characterization of illness/outbreak
     - Population at risk
     - Risk factors for illness
     - Identify and initiate outbreak control measures
3) Active Surveillance
     - Local
     - National

What Does CDC do in a Public Health Emergency/ Disaster?

4) Prevention/treatment of illness
   - Provide medical materiel through NPS
   - Provide treatment protocols/guidelines
   - Contact identification/tracing when transmissible agent
   - Worker safety guidelines
   - Record keeping for prophylaxis administration and adverse events
   - Monitoring of therapeutic efficacy and inventory
   - Vaccination guidelines/training

What Does CDC do in a Public Health Emergency/ Disaster?

5) Information dissemination/coordination

- Public information
- Media information
- Public health/medical information
- Communications with other agencies

CDC's Directors Operations Center (DOC) is the Gateway to CDC's Emergency Response System

Recent
CDC Response Activities

- World Trade Center
- Anthrax Letters
- Threats and Hoaxes
- Hurricane Floyd (North Carolina)
- Winter Olympics

World Trade Center & Anthrax Responses

- **Stockpile Deployment**

  70 missions distributing over 4 million pills and other supplies

- **Deployment of Staff**

  Over 450 staff sent to the field

- **Rapid laboratory response**

  Thousands of samples processed at CDC

DHHS Funding Efforts for Public Health Preparedness

2002 Supplemental Funds for Public Health Preparedness and Response for Bioterrorism: FY 2002- $918 million

- To upgrade state and local public health jurisdictions' preparedness for and response to bioterrorism, other outbreaks of infectious disease, and other public health threats and emergencies

CDC Activities to Strengthen National Capabilities

Cooperative Agreements to States, Large Cities and Territories

- Targeted all state/territorial health departments and New York City, Chicago, and Los Angeles city health departments
- Initial awards made in August/September, 1999

Focus Areas for Cooperative Agreements

- Preparedness Planning and Readiness Assessment
- Surveillance and Epidemiology Capacity Building
- Laboratory Capacity Building - Biologic Agents
- Laboratory Capacity Building - Chemical Agents
- Communications and Information Technology
- Public Information and Communication
- Education and Training

In Conclusion, to be Prepared, Public Health Needs:

- Incident command and support structure
  - Interagency Communications
- Liaisons with key partners
- Preparedness and response plans
- Health Communications
- Epidemiology and surveillance
- Laboratory
- Environmental/occupational health
- Trained personnel/ Exercises

Questions and Additional Information

CDC Directors Operations Center
770-488-7100

CDC Website
http://www.cdc.gov/
http://www.cdc.gov/smallpox